PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 2004282C4090	FOR FURTHER ACTION	See Form PCT/PEA/416
International application No. PCT/JP2004/017225	International filing date *(day/month/year)* 12.11.2004	Priority date *(day/month/year)* 31.03.2004

International Patent Classification (IPC) or national classification and IPC
G06F9/50, G06F9/46, G06F11/00

Applicant
TOYOTA JIDOSHA KABUSHIKI KAISHA et al.

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 6 sheets, including this cover sheet.

3. This report is also accompanied by ANNEXES, comprising:

    a. ☐ *sent to the applicant and to the International Bureau)* a total of sheets, as follows:

    ☐ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).

    ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.

    b. ☐ *(sent to the International Bureau only)* a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

    ☒ Box No. I   Basis of the opinion

    ☐ Box No. II   Priority

    ☐ Box No. III   Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

    ☐ Box No. IV   Lack of unity of invention

    ☒ Box No. V   Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

    ☐ Box No. VI   Certain documents cited

    ☐ Box No. VII   Certain defects in the international application

    ☐ Box No. VIII   Certain observations on the international application

Date of submission of the demand 31.05.2005	Date of completion of this report 21.02.2006
Name and mailing address of the international preliminary examining authority: European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Krischer, S Telephone No. +49 89 2399-

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Box No. I   Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

    ☐   This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:

    ☐ international search (under Rules 12.3 and 23.1(b))
    ☐ publication of the international application (under Rule 12.4)
    ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

    Description, Pages

    1-15   as originally filed

    Claims, Numbers

    1-4   as originally filed

    Drawings, Sheets

    1-3   as originally filed

    ☐   a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐   The amendments have resulted in the cancellation of:
    ☐ the description, pages
    ☐ the claims, Nos.
    ☐ the drawings, sheets/figs
    ☐ the sequence listing *(specify)*:
    ☐ any table(s) related to sequence listing *(specify)*:

4. ☐   This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
    ☐ the description, pages
    ☐ the claims, Nos.
    ☐ the drawings, sheets/figs
    ☐ the sequence listing *(specify)*:
    ☐ any table(s) related to sequence listing *(specify)*:

    *   If item 4 applies, some or all of these sheets may be marked "superseded."

Box No. V   Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-4
	No:	Claims	
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-4
Industrial applicability (IA)	Yes:	Claims	1-4
	No:	Claims	

2. Citations and explanations (Rule 70.7):

    see separate sheet

INTERNATIONAL PRELIMINARY
REPORT ON PATENTABILITY
(SEPARATE SHEET)

10/583371

AP3 Rec'd PCT/PTO 19 JUN 2006

International application No.

PCT/JP2004/017225

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1.   **Documents**

Reference is made to the following documents:

D1   RUSSINOVICH, M: "Inside the Windows NT Scheduler, Part 2", pages 1-6, WEBSITE OF WINDOWS-IT-PRO MAGAZINE, [Online] August 1997 (1997-08), XP002318776; Retrieved from the Internet: URL:http://www.windowsitpro.com/Articles/P rint.cfm?ArticleID=303> [retrieved on 2005-02-22]

2.   **Inventiveness of claim 1**

1.   The document D1 is regarded as being the **closest prior art** to the subject-matter of the claim, and **discloses** (the references in parentheses applying to this document):

a task execution system including at least two processors, comprising:
        a task management table registered with an associated relationship between at least a task, a main execution processor for executing the task and an in-charge-of-stoppage processor for executing the task when said main execution processor stops (for the "main execution processor" see the "ideal processor" in page 2, paragraph 10, last line: "A programmer can assign an ideal processor to a thread."; this "ideal processor" is listed in the "hard-affinity" table of paragraph 8, line 2: "The hard affinity of a thread is essentially a list of processors that the thread can execute on"; the "in-charge-of-stoppage processor" is another processor listed in the hard-affinity table);
        a selecting unit selecting an executable task from among tasks registered in said task management table (page 2, paragraph 8, line 3: "the scheduler will never schedule a thread on a nonlisted processor", i.e. not listed in the hard-affinity table);
        a checking unit checking, if a processor other than said processor trying to

execute the selected task is registered as said main execution processor for the selected task, a *busy* state of said processor registered as said main execution processor (page 2, paragraph 11, line 1: "The scheduler tries to schedule a thread on its ideal CPU, but if that CPU is busy with a higher-priority thread, the scheduler looks at other processors in the thread's hard-affinity list."); and

an executing unit executing the selected task if said processor registered as said main execution processor remains *busy* (a second processor in the hard-affinity table executes the task if the ideal processor is busy).

2. Thus, the **difference** between the subject-matter of the claim and that of D1 is that the second processor is used only if the first processor has stopped, and not already if the first processor is busy with a higher-priority task as in D1.

3. The **problem** to be solved by the present invention may therefore be regarded as assuring the execution of a task in case of a stopped first processor (the "main execution processor") assigned to a task.

4. The **solution** proposed cannot be considered as involving an inventive step since the solution merely consists in *weakening* the condition that determines when the task migrates to the second processor of the hard-affinity table: In D1, the first processor being busy with a higher-priority task is already enough for the scheduler to migrate the task. In the claim, the overall performance of the first processor must have decreased to zero (the processor being "completely busy", i.e. stopped), before the scheduler migrates the task. A skilled person obviously would weaken the migration condition of D1 if the problem of assuring the execution of a task only for a *stopped* first processor had been posed, while neglecting the performance of the whole system.

5. Therefore, the subject-matter of this claim is **not inventive** in the sense of Article 33(3) PCT.

3. **Inventiveness of independent system claim 2**

Since the second independent system claims 2 merely contains two unspecific "judging units" in addition to system claim 1 without disclosing their functioning or their internal structure, the objections concerning lack of inventive step of claim 1 apply accordingly to this claim.

4. **Inventiveness of independent method and program claims 3 and 4**

Since method and program claims 3 and 4 only contain steps and means that correspond to the features of system claim 1, the objections concerning lack of inventive step of claim 1 apply accordingly to these claims.